Math 10

Lesson 7-5 Answers

**Lesson Questions**

**Question 1**

For ΔWXY we only know an angle to start. An angle is not enough to calculate XY. We need to know either WX or WY to calculate XY. Note that we can calculate the common side WY from ΔWYZ using the sin function.



Now for ΔWXY we have



**Question 2**



39 m

y

x

x is the common side to the two triangles. For the lower triangle we have



Now we can find y



The height of the building is 26.0 m + 39 m = **65.0 m**.

**Question 3**

Draw a labeled diagram. The fires are due south and due west of the tower, so the angle between the lines of sight, TW and TS, to the fires from the base of the tower is 90°. Since the angles of depression are 5° and 2° respectively, the angles between the tower, RT, and the lines of sight are 85° and 88° respectively. To calculate the distance WS between the fires, first calculate the distances, TW and TS, of the fires from the base of the tower.

Use the tangent ratio in right RTW.



Use the tangent ratio in right RTS.



In right STW, use the Pythagorean Theorem.

SW2 = WT2 + TS2

SW2 = 1028.7047…2 + 2577.2627…2

SW =(1028.7047…2 + 2577.2627…2)1/2

SW = 2774.9805…

The distance between the fires is approximately 2775 ft.

**Question 4**

Note that the angle between Leif, the base of the tower and Tannis is 90o. If we find the distance from the base of the tower to Leif (L) and the distance from the base of the tower to Tannis (T), we can then calculate the distance between Leif and Tannis (x).



x

L

T

Find L Find T

 

Now calculate x



The distance between Leif and Tannis is 32 m.

**Assignment**

1. a) 6.0 cm b) 6.0 cm

2. a) 5.7 cm b) 4.9 cm c) 5.7 cm

3. a) 93.2° b) 123.7°

4. a) 19 ft. b) 21 ft.

5. 4.5 m

6. a) 53 m b) 29 m c) 50 m

7. a) 23 m b) 20 m

8. a) 5.4 cm b) 33.9°

9. Approximately 8.3 m

10. Approximately 18 in.